## Texas Academy of Science to honor three JSC planetary scientists

By Ann Hutchison

he Texas Academy of Science has named three members of the team that first reported possible signs of fossilized life in a meteorite from Mars as Distinguished Texas Scientists for their pioneering research.

Named as recipients of the year 2000 Distinguished Texas Scientist award are JSC scientists Dr. David McKay, Dr. Everett Gibson Jr. and Kathie Thomas-Keprta. They will be honored at the academy's 103rd annual meeting March 9 at Texas A&M University's campus in Kingsville.

"Their contributions to science, science education and to the state of Texas are immeasurable and truly appreciated," wrote Dr. David R. Cecil, vice-president of the academy, in announcing the award. The honor is awarded "in recognition of distinguished contributions to science through research and publication that bring recognition at the national and international level."

Just as Columbus discovered the New World, we must continue to explore our own solar system and the cosmos beyond. Our exciting results, if they do hold up under scrutiny, may be only a precursor to discoveries that will be made from the study of Mars, comets and Europa in the future.

– Dr. Everett Gibson

McKay, Gibson and Thomas-Keprta were the co-leaders of the team that included scientists from Stanford University, the University of Georgia and McGill University. They believe the meteorite, known as ALH84001, contains evidence that strongly suggests primitive life may have existed on Mars more than 3.6 billion years ago. In 1996, the NASA-funded team reported finding the first organic molecules believed to be of Martian origin, several mineral features characteristic of biological activity, and



NASA JSC Photo JSC2000-02521 by James Blair

MARS METEORITE RESEARCH TEAM — JSC scientists Dr. Everett Gibson Jr., Kathie Thomas-Keprta, and Dr. David McKay have been named Distinguished Texas Scientists of the year.

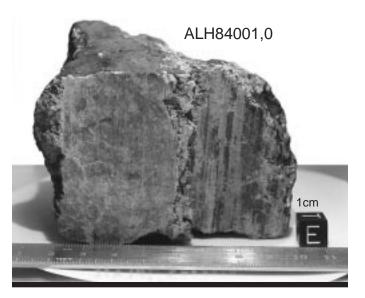
possible microscopic fossils of primitive, bacteria-like organisms inside the ancient Martian rock that fell to Earth as a meteorite.

"The search for life on Mars is the most exciting science quest of the new millennium," McKay noted. "This search

has certainly struck a resonant chord with the American public." He added that major new theories in science, such as the once-new theories of plate tectonics and the extinction of the dinosaurs by a large cometary impact, might take years before they are accepted. In both of these cases, he said, the scales were tipped by the discovery of a "smoking gun" decades after the original hypotheses. "We have not yet found the 'smoking gun' to prove without a doubt that life existed on Mars, but we are looking for it."

The awardees will discuss their research, which has been the catalyst for the formation of the new interdisciplinary research field of astrobiology, at the academy's annual meeting.

In addition to its impact on the infant field of astrobiology, the research fascinated the public and the news media. "The search for life on Mars and within Martian meteorites has captured the interest



This 4.5 billion-year-old rock, labeled meteorite ALH84001, is believed to have once been a part of Mars and to contain fossil evidence that primitive life may have existed on Mars more than 3.6 billion years ago. The rock is a portion of a meteorite that was dislodged from Mars by a huge impact about 16 million years ago and that fell to Earth in Antarctica 13,000 years ago. The meteorite was found in Allan Hills ice field, Antarctica, by an annual expedition of the National Science Foundation's Antarctic Meteorite Program in 1984. It is preserved for study at the Johnson Space Center's Meteorite Processing Laboratory.

of many people, from schoolchildren to those in the research lab," Gibson said. The search, however, has just begun, according to Gibson. "Just as Columbus discovered the New World, we must continue to explore our own solar system and the cosmos beyond. Our exciting results, if they do hold up under scrutiny, may be only a precursor to discoveries that will be made from the study of Mars, comets and Europa in the future."

"Our work has generated interest not only in the search for extraterrestrial life on Mars, but also in the search for unique organisms on Earth in sizes much smaller than previously recognized," Thomas-Keprta observed. "In order to contemplate the types of organisms that could be on other planets or moons, we need to understand as much as possible about terrestrial microbes. This search is essential prior to the return of the first samples from Mars."

The three scientists have received countless honors and awards, including the National Space Society's Space Pioneer Award, *Popular Science* magazine's 1996 Greatest Achievement in Science and Technology Award, *Time* magazine's 1996 Best Science Award and The Planetary Society's 1996 Outstanding Accomplishment in Planetary Science Award, among many others. The findings also were named one of *Discover* magazine's Top 200 Scientific Discoveries of the 20th Century. The JSC scientists have given nearly 1,000 interviews about their research since 1996.

McKay, the principal investigator for JSC's Astrobiology Institute, specializes in scanning electron microscopy and the study of the evolution of planetary soils. He has more than 300 peer-reviewed publications.

Gibson is a principal investigator in JSC's exobiology program and directs the Light Element Analysis Laboratory. Specializing in the study of volatiles and their compounds in terrestrial and extraterrestrial materials, he has more than 200 peer-reviewed publications to his credit.

Thomas-Keprta is a senior scientist with Lockheed Martin who specializes in the analysis of extraterrestrial particles at the atomic scale. She has more than 140 peer-reviewed publications.

"This is an exciting time to be one of the lucky researchers examining materials from other planetary bodies," Gibson said as he summarized the feelings of all three scientists about their work.

## President proposes \$435 million boost to NASA budget

resident Clinton is proposing a \$435 million increase for NASA, raising the agency's budget to \$13.6 billion for the 2001 fiscal year.

The 2001 budget request to Congress includes \$2.11 billion for the International Space Station, \$3.16 billion for the Space Shuttle Program, \$2.39 billion for the Office of Space Science, \$1.4 billion for NASA's Earth Science Enterprise, \$1.19 billion for the Aero-Space Technology Enterprise, and \$302 million for the Office of Life and Microgravity Sciences and Applications.

The proposed budget would also provide money to hire 500 new employees and replace 1,500 current workers who are expected to retire or leave the agency.

"Over the past seven years, we were challenged to operate more safely, more efficiently and at higher levels of performance," NASA Administrator Daniel S. Goldin said during a February 7 press conference. "The NASA team delivered and will continue to improve."

The increase to the NASA budget is the first in seven years. Goldin said that the NASA budget would continue to increase in the years ahead, adding that in 2005 it "will be \$2 billion higher than this year's budget."

Funding for the ISS Program allocates \$300 million for the Russian Program Assurance budget to provide contingency activities and backup capabilities in response to concerns about the impact of the Russian government's fiscal problems in meeting its station commitments.

In spring 1997, NASA embarked on the initial steps of a contingency plan to provide U.S. capabilities to mitigate the impact of Russian delays. NASA purchased an Interim Control Module from the U.S. Naval Research Laboratory to provide attitude control and reboost functions for continuation of the ISS assembly sequence without the Russian Service Module. The ICM is being prepared to support a launch as early as December 2000. Provided the Russian Service

Module is successfully launched this summer, the ICM could be ready for launch as a backup propulsion capability 12 months later.

The president's budget also calls for an increase in research funds for the space station from \$394 million to \$455 million.

Goldin announced that the proposed budget for the space shuttle safety program would increase from \$600 million to \$2.1 billion over the next six-year period. Shuttle upgrades will improve reliability and ensure continued safe operations of the system into the next century. Examples of upgrades include advanced health monitoring of the shuttle's main engines and improvements to the Auxiliary Power Units and the Solid Rocket Booster system. Studies for upgrading the avionics and cockpit areas of the Orbiter to provide for reduced crew procedures during ascent are also under consideration. An external, independent review panel will determine the priority of the upgrades. The upgrades are targeted for completion by 2005.

NASA plans to invest \$6 billion over the 2000 to 2005 period in developing the next generation of reusable launch vehicles. "Even as we upgrade our shuttle fleet, we are aggressively investing an even larger sum of money in our number one development priority, the next generation of 'revolutionary' reusable launch vehicles," Goldin said.

The president also proposed an increase in NASA funding for academic programs from \$7.3 million to \$10.3 million.

According to Goldin, the budget will allow NASA to "continue to do what it does best: develop breakthrough technologies." He said that three key technologies will take NASA where it wants to go: biotechnology, nanotechnology and information technology. "Over the past decade there have been tremendous scientific breakthroughs. And now, we are ready for our technology to move out and incorporate that knowledge," Goldin said.